

What is Claimed:

1. A vehicle tire, comprising:
 - a tread comprising a circumference, profile structures, and grooves;
 - the grooves running generally diagonally into a central area of the tread;
 - the grooves and the profile structures forming base pitches;
 - the base pitches being circumferentially arranged in at least one tread area and having a pitch sequence arranged to minimize tire noise; and
 - at least two of the base pitches having different circumferential lengths;
 - one of the at least two base pitches comprising at least one profile structure;
 - and
 - another of the at least two base pitches comprising at least two profile structures separated by at least one cross-groove.
2. The tire of claim 1, wherein the vehicle tire is a pneumatic radial tire.
3. The tire of claim 1, wherein the one of the at least two base pitches comprises at least two profile structures subdivided by at least one cross-groove and the another of the at least two base pitches comprises at least three profile structures subdivided by at least two cross-grooves.
4. The tire of claim 1, wherein the profile structures form an outer surface of the tread.
5. The tire of claim 1, wherein the base pitches are arranged according to a specific sequence.
6. The tire of claim 1, wherein the profile structures in the another of the at least two base pitches are arranged according to a specific sequence.

7. The tire of claim 1, wherein the at least one profile structure in the one of the at least two base pitches and the at least two profile structures in the another of the at least two base pitches are arranged with different specific sequences.

8. The tire of claim 1, wherein the one of the at least two base pitches comprises at least two profile structures having different circumferential lengths subdivided by at least one cross-groove and the another of the at least two base pitches comprises at least three profile structures having different circumferential lengths subdivided by at least two cross-grooves.

9. The tire of claim 1, wherein the one of the at least two base pitches comprises first and second profile structures subdivided by at least one cross-groove and the another of the at least two base pitches comprises third, fourth and fifth profile structures subdivided by at least two cross-grooves.

10. The tire of claim 9, wherein the first and second profile structures have different circumferential lengths.

11. The tire of claim 9, wherein the first and second profile structures have the same circumferential lengths.

12. The tire of claim 9, wherein the first and at least one of the third, fourth and fifth profile structures have the same circumferential lengths.

13. The tire of claim 9, wherein the second and at least one of the third, fourth and fifth profile structures have the same circumferential lengths.

14. The tire of claim 9, wherein at least two of the third, fourth and fifth profile structures have the same circumferential lengths.

15. The tire of claim 9, wherein the first, second, third, fourth and fifth profile structures have the same circumferential lengths.

16. The tire of claim 9, wherein the first, second, third, fourth and fifth profile structures have different circumferential lengths.

17. The tire of claim 9, wherein the third, fourth and fifth profile structures have different circumferential lengths.

18. The tire of claim 9, wherein at least two of the first, second, third, fourth and fifth profile structures have the same circumferential lengths.

19. The tire of claim 9, wherein at least two of the first, second, third, fourth and fifth profile structures have different circumferential lengths.

20. The tire of claim 1, wherein each of the base pitches comprises between two profile structures and five profile structures.

21. The tire of claim 1, wherein each of the base pitches comprises at least two profile structures.

22. The tire of claim 1, wherein each of the base pitches comprises the same number of profile structures.

23. The tire of claim 1, wherein each of the base pitches has two profile structures.

24. The tire of claim 1, wherein each of the base pitches has three profile structures.

25. The tire of claim 1, wherein each of the base pitches has four profile structures.

26. The tire of claim 1, wherein each of the base pitches has five profile structures.

27. The tire of claim 1, wherein one of the profile structures is the shortest of the profile structures in circumferential length and wherein one of the profile structures is the longest of the profile structures in circumferential length, and wherein a ratio of the circumferential length of the shortest profile structure to the circumferential length of the longest profile structure is between approximately 1 : 1.2 and approximately 1 : 2.

28. The tire of claim 27, wherein the ratio is between approximately 1 : 1.2 and approximately 1 : 1.6.

29. The tire of claim 27, wherein the ratio is between approximately 1 : 1.6 and approximately 1 : 2.

30. The tire of claim 1, wherein the at least one cross-groove is narrower in width than at least one of the grooves.

31. The tire of claim 1, wherein each at least one cross-groove is narrower in width than at least one of the grooves.

32. The tire of claim 1, wherein the one of the at least two base pitches comprises first and second profile structures subdivided by a first cross-groove and the another of the at least two base pitches comprises third, fourth and fifth profile structures subdivided by two second cross-grooves.

33. The tire of claim 32, wherein a width of the first cross-groove is different than a width of at least one of the two second cross-grooves.

34. The tire of claim 32, wherein a width of the first cross-groove is different than a width of each of the two second cross-grooves.

35. The tire of claim 1, wherein each of the profile structures is arranged in a circumferential row.

36. The tire of claim 35, wherein the circumferential row is arranged in a shoulder of the tread.

37. The tire of claim 1, wherein the tread further comprises at least one tread edge and wherein the grooves extend from the central area to the at least one tread edge.

38. The tire of claim 37, wherein the grooves have greater curvature in the central area than in an area of the at least one tread edge.

39. The tire of claim 1, wherein the grooves are oriented at a first angle, relative to a circumferential direction, in the central area and at a second angle, relative to the circumferential direction, in an area of the at least one tread edge, and wherein the first angle is different from the second angle.

40. The tire of claim 39, wherein the first angle is less than the second angle.

41. The tire of claim 40, wherein the first angle is less approximately 45 degrees and the second angle is greater than approximately 45 degrees.

42. A method of making the tire of claim 1, the method comprising:
forming the tread with the profile structures and the grooves;
arranging the base pitches sequentially over an entire circumferential area in a pitch sequence to minimize tire noise;
forming at least two of the base pitches with different circumferential lengths;
providing one of the at least two base pitches with at least one profile structure; and
providing another of the at least two base pitches with at least two profile structures separated by at least one cross-groove.

43. A vehicle pneumatic tire, comprising: ✓
a tread comprising a circumference, profile structures, and grooves;
the grooves extending from a central area of the tread to at least one tread edge and having greater curvature in the central area than in an area of the at least one tread edge;
the grooves and the profile structures forming base pitches;
the base pitches being sequentially arranged over an entire circumferential area and having a pitch sequence which minimizes tire noise; and
at least two of the base pitches having different circumferential lengths;
one of the at least two base pitches comprising at least one profile structure;
and
another of the at least two base pitches comprising at least two profile structures separated by at least one cross-groove.

44. The tire of claim 43, wherein the one of the at least two base pitches comprises at least two profile structures subdivided by at least one cross-groove and the another of the at least two base pitches comprises at least three profile structures subdivided by at least two cross-grooves.

45. The tire of claim 43, wherein the one of the at least two base pitches comprises at least two profile structures having different circumferential lengths subdivided by at least one cross-groove and the another of the at least two base pitches comprises at least three profile structures having different circumferential lengths subdivided by at least two cross-grooves.

46. The tire of claim 43, wherein the one of the at least two base pitches comprises first and second profile structures subdivided by at least one cross-groove and the another of the at least two base pitches comprises third, fourth and fifth profile structures subdivided by at least two cross-grooves.

47. The tire of claim 46, wherein the first and second profile structures have different circumferential lengths.

48. The tire of claim 46, wherein the first and second profile structures have the same circumferential lengths.

49. The tire of claim 46, wherein the first and at least one of third, fourth and fifth profile structures have the same circumferential lengths.

50. The tire of claim 46, wherein the second and at least one of the third, fourth and fifth profile structures have the same circumferential lengths.

51. The tire of claim 46, wherein at least two of the third, fourth and fifth profile structures have the same circumferential lengths.

52. The tire of claim 46, wherein the first, second, third, fourth and fifth profile structures have the same circumferential lengths.

53. The tire of claim 46, wherein the first, second, third, fourth and fifth profile structures have different circumferential lengths.

54. The tire of claim 46, wherein the third, fourth and fifth profile structures have different circumferential lengths.

55. The tire of claim 46, wherein at least two of the first, second, third, fourth and fifth profile structures have the same circumferential lengths.

56. The tire of claim 46, wherein at least two of the first, second, third, fourth and fifth profile structures have different circumferential lengths.


57. The tire of claim 43, wherein each of the base pitches comprises between two profile structures and five profile structures.

58. The tire of claim 43, wherein each of the base pitches comprises at least two profile structures.

59. The tire of claim 43, wherein each of the base pitches comprises the same number of profile structures.

60. A method of making the tire of claim 43, the method comprising:
forming the tread with the profile structures and the grooves;
arranging the base pitches sequentially over an entire circumferential area in a pitch sequence that minimizes tire noise;
forming at least two of the base pitches with different circumferential lengths;
providing one of the at least two base pitches with at least one profile structure; and

providing another of the at least two base pitches with at least two profile structures separated by at least one cross-groove.

61. A vehicle pneumatic tire, comprising: 

a tread comprising a central area having a central circumferential groove, profile structures arranged on opposite sides of the central circumferential groove, tread edges, and grooves;

the grooves extending from the central circumferential groove to each of the tread edges, whereby oppositely extending grooves form V-shaped grooves which extend to the tread edges;

each of the grooves having greater curvature in the central area than in an area of the tread edges;

the grooves and the profile structures being arranged on each side of the central circumferential groove forming base pitches;

each base pitch having one groove and at least one profile structure;

the base pitches being sequentially arranged over an entire circumferential surface of the tread and having a pitch sequence which minimize tire noise;

the base pitches comprising first base pitches and second base pitches, wherein the first and second base pitches have different circumferential lengths;

the first base pitches comprising at least one profile structure; and

the second base pitches comprising at least two profile structures separated by at least one cross-groove.

62. The tire of claim 61, wherein each of the first base pitches comprises at least two profile structures subdivided by at least one cross-groove and wherein each of the second base pitches comprises at least three profile structures subdivided by at least two cross-grooves.

63. The tire of claim 61, wherein the base pitches further comprises third base pitches, wherein the first, second and third base pitches have different circumferential lengths.

64. The tire of claim 63, wherein each of the third base pitches comprises at least three profile structures subdivided by at least two cross-grooves.

65. The tire of claim 61, further comprising first and second circumferential grooves arranged on opposite sides of the central circumferential groove and a plurality of pocket grooves opening out at the first and second circumferential grooves.